

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

In the Matter of

Federal-State Joint Board on  
Universal Service

Forward-Looking Mechanism  
For High Cost Support for  
Non-Rural LECS

CC Docket No. 96-45

CC Docket No. 97-160

**COMMENTS OF BELL ATLANTIC**

**PUBLIC VERSION**

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## Summary

The proposed cost inputs in the Further Notice of Proposed Rulemaking systematically understate actual forward-looking costs. In addition, the Commission's new proposal to determine customer locations using 100 percent road surrogate data is even more inaccurate than the flawed “geocode” data that the Commission previously used. These inaccurate inputs do nothing to overcome the fundamental shortcoming of the proxy model platform – its reliance on a hypothetical network that no carrier has or will ever construct. As a result, the cost proxy model with the proposed inputs is still hopelessly inaccurate in identifying high cost areas.

In addition, the proposed cost inputs are inconsistent even with the Commission's own principles for identifying forward-looking costs. The Commission proposes to use the depreciation rates and cost of capital that it prescribed in a monopoly environment, despite the fact that the Commission's own definition of forward-looking costs requires consideration of the increasingly competitive environment that will exist in the future. In addition, the Commission ignores the life-cycle costs of purchasing switching capacity, opting for a purely hypothetical purchase of 100 percent brand new switches that would be practically at full capacity when purchased, requiring new switches in every office within a year. This cannot be considered forward-looking, since no carrier, incumbent or new entrant, purchases switching capacity in this manner, and it would be economically irrational to do so.

The proposed inputs are inherently arbitrary and are biased towards underestimating actual forward-looking costs;

- the inputs are based on studies that are not statistically valid;
- the studies discard data simply because they would result in higher input costs, but not because there is any objective reason to consider the data to be unreliable;
- the Commission ignores the higher costs of adding switching capacity to existing switches;
- the Commission assumes that the local exchange carriers would bear an unrealistically low portion of their own costs of poles and underground structure; and
- the nationwide expense factors ignore state-by-state differences in expense levels, which is counter-productive for a model that is supposed to identify high cost areas.

Not surprisingly, these flaws in the inputs are reflected in the output of the proxy model, which does a poor job of identifying high cost areas. The model would both narrow the focus of non-rural support (reducing the number of states that receive support to 12 from 21), and greatly increase the amount (to \$357 million from the current \$78 million). Consequently, the model would deny high cost support to many states that currently receive it, and it would send vast amounts of support to a small number of states at the expense of consumers in the rest of the country.

There is no need to adopt the flawed proxy model approach, however, when a much simpler and more effective alternative is available. The Commission should rely on the current method of calculating high cost support based on actual costs in a state that are higher than the national average cost per line, but make support portable to all eligible carriers in a state. This support could be disaggregated within a state insofar as a state has adopted zones for unbundled network elements (“UNEs”), based on the ratios of UNE loop rates in each zone. This would give the states the ability to target federal support to

the areas that need it most, and to complement the federal fund with appropriate state universal service funding mechanisms.

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## COMMENTS OF BELL ATLANTIC<sup>1</sup>

### I. Introduction

All of the proxy models that have been proposed in this proceeding are fatally flawed, because they are based on hypothetical networks that have not, and could not, be built, and because they have never demonstrated any accuracy in identifying high cost areas. The proposed inputs in the Further Notice of Proposed Rulemaking<sup>2</sup> do not cure these defects. Indeed, by systematically understating investment, expense, and capital costs, the proposed inputs fail to reflect the actual forward-looking costs of either the incumbent local exchange carriers or new entrants. Moreover, faced with undeniable

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<sup>1</sup> The Bell Atlantic telephone companies (“Bell Atlantic”) are Bell Atlantic-Delaware, Inc.; Bell Atlantic-Maryland, Inc.; Bell Atlantic-New Jersey, Inc.; Bell Atlantic-Pennsylvania, Inc.; Bell Atlantic-Virginia, Inc.; Bell Atlantic-Washington, DC, Inc.; Bell Atlantic-West Virginia, Inc.; New York Telephone Company and New England Telephone and Telegraph Company.

defects in the source data for customer locations and customer lines, which is the starting point for all of the other calculations, the Further Notice would gloss over the problem by resorting to 100 percent “road surrogate” data, which the Commission previously rejected as being unreliable. As shown below, the latest version of the model with its proposed inputs is still hopelessly inaccurate in identifying high cost areas.

These flaws in the proxy model approach will prevent it from satisfying the Act’s requirement that high cost support be “sufficient . . . to preserve and advance universal service.” 47 U.S.C. Section 254(b)(5). The issue is not the size of the high cost fund, which the Commission and the Joint Board properly recognize should not increase significantly from current levels for non-rural local exchange carriers. *See Seventh Report and Order*, CC Docket No. 96-45, FCC 99-119 (rel. May 28, 1999), ¶ 69. Rather, the issue is whether the proxy model will satisfy the Commission's objective of targeting support to high cost areas where it is needed to preserve affordable rates. *See id.* at ¶ 57. A model that is unreliable can do more harm than good, denying support to areas that need it, and burdening the entire country with excessive support to other areas. A faulty model would also cause inefficient allocations of resources, encouraging too much investment in some areas and discouraging competitive entry in other areas.

There is no need for the Commission to take such risks, when a much simpler and more effective alternative is available. The Commission's recent decision to use a cost benchmark to identify states with costs that are higher than the national average is similar

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<sup>2</sup> Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, Further Notice of Proposed Rulemaking, FCC 99-120 (rel. May 28, 1999).

to the current system, which relies on such a comparison using actual, reported costs. To make this support portable, and to target it to high cost areas within a state, the Commission need only identify the total high cost support per line in each state. This support could be disaggregated within a state insofar as a state has adopted zones for unbundled network elements (“UNEs”), based on the ratios of UNE loop rates in each zone. This would give the states the ability to target federal support to the areas that need it most, and to complement the federal fund with the appropriate state universal service funding mechanism.

## **II. The Proxy Model Will Do More Harm Than Good By Mis-Directing High Cost Funding To Areas That Do Not Need It And By Burdening Customers In Areas That Would Pay More Into The Fund.**

One beneficial effect of the Commission's proposed cost inputs is that the parties now, for the first time, have been able to run the complete model and examine its outputs. The results confirm Bell Atlantic's fear that use of a proxy model to determine high cost support will harm, rather than promote, universal service.

Attachment A provides a state-by-state output of the model showing support levels with a 135% benchmark and a \$2 per-line state responsibility at the density level. With these criteria, the number of states that would receive non-rural high cost support would decrease to 12 from 21, while the amount of support would increase to \$357 million from the current \$78 million. The proxy model approach would both narrow the focus of high cost support and greatly increase the level of funding, the burden of which would be passed along to consumers in all other states.

The fact that the model directs such a large amount of support to so few states suggests that it does not identify high cost areas accurately. For instance, it is not clear why Mississippi, which currently receives \$7 million per-year in non-rural high cost support, should receive \$134 million through the proxy model approach. Wyoming, which currently receives \$4.5 million, would get \$11.8 million through the model, while New Mexico, which also currently receives \$4.5 million, would get nothing. Kentucky, which currently receives \$1.3 million in non-rural support, would receive almost \$10 million, while seven other states that currently receive far more would get no non-rural support.

The Commission has proposed to “hold harmless,” at least for a few years, states that would receive less under the proxy model than they do today, but that merely puts a fig leaf over the model’s failure to properly identify high cost areas. Over the long run, the model will deny support to states that are known to be high-cost, and direct additional support to a handful of other states. This will harm universal service throughout the country by requiring other states to burden their residents’ phone rates to pay for windfalls to other states. The “tax” on residents of states that make a net contribution to the high-cost fund will make telephone service less affordable in those states, and jeopardize telephone penetration rates. For this reason, the proxy model approach is contrary to the Act’s goals for universal service.

**III. Instead Of Using A Proxy Model, The Commission Should Retain The Current Mechanism To Calculate High Cost Support For Non-Rural Local Exchange Carriers, But Use Unbundled Network Elements To Target Federal Support To High Cost Areas Within A State.**

The Commission asks how to determine support levels without resorting to a forward-looking cost model if the proxy model is not ready for implementation on January 1, 2000. *See* FNPRM, ¶ 243. There is no need for a proxy model, either in the near future or in the long run, and the current model remains so fundamentally flawed that there is no chance it could be fixed. The Commission's decision to adopt a cost benchmark based on nationwide average costs, and to calculate support for each state based on the difference between the state's costs and the benchmark, is very similar to the current system. Moreover, the Commission's intention not to increase significantly the size of the fund for non-rural local exchange carriers from current levels, and its tentative decision to adopt a "hold harmless" provision to prevent states from receiving less support than they receive today, also point to high cost funding that is similar to current levels. Since the Commission found that service is generally affordable (*see* Seventh Report and Order, ¶¶ 37-38), there is no need for a drastic revision to the current high cost funding mechanism, at least for non-rural carriers.

If the Commission is concerned about targeting federal support to high cost areas within a state, and about making support portable to new entrants, this can be done without resorting to a flawed and unproven proxy model. The Commission can use the current mechanism to determine support on a state-wide level, and then translate that support to a per-line amount that either the incumbent local exchange carrier or a new

entrant would be entitled to receive for each qualified line it serves. This per-line amount could be disaggregated within a state to the extent that a state has adopted de-averaged UNEs. For instance, if a state had three UNE zones, the Commission could require the state to determine the weighted average UNE loop rate, and then target federal support only to UNEs that were above the national average. Support should first go to the loops in the zone with the highest UNE rates to the extent necessary to bring those rates to the level of UNE rates in the next highest zone. If any money were left over, it would be spread over all UNE loops in the two highest UNE rate zones. If support were targeted this way, it would encourage carriers to provide affordable service even in the highest cost zones, and it would avoid providing support to loops in low cost zones where support is not needed. A state could supplement this approach with its own intrastate universal service fund, if any.

#### **IV. The Commission's Proposed Cost Inputs Are Inconsistent With Forward-Looking Cost Principles.**

The proxy model continues to fail to carry out the goal that the Commission initially established in the Universal Service Order<sup>3</sup> – to determine the forward-looking economic cost of supporting universal service. In fact, the network that is constructed by the Commission's proposed proxy model does not even attempt to estimate the forward-looking costs of either the incumbent local exchange carrier or a new entrant. Rather, as one Court put it, the model posits a “mythical” network limited only by the imagination of

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<sup>3</sup> Federal-State Joint Board on Universal Service, 12 FCC Rcd 8776 (1997) (“Universal Service Order”).

its designers. *See* U.S. West Communications, Inc., v. Renz D. Jennings, 1999 U.S. Dist. LEXIS 6821 (rel. May 5, 1999), p. 5. That is the case here – the “efficient carrier” that is portrayed in the model algorithms is a monopoly provider of all lines in a state that constructs a brand new network, from scratch, to serve only a snapshot of current demand. No new entrant could achieve this economy of scale, and no incumbent local exchange carrier would follow the short-range design principles in the Commission's model.

The proposed inputs exacerbate the problems inherent in the proxy model approach by departing from forward-looking cost principles. For instance, the Commission proposes to use depreciation rates and a rate of return that reflect the regulated monopoly environment of the past rather than the competitive environment that all carriers will face in the future. This is fundamentally inconsistent with the Commission's own theory of forward-looking costs that it first articulated in the Local Competition Order, as is explained in the attached affidavit of Gregory L. Rosston:<sup>4</sup>

A forward-looking cost model must take into account all factors that will cause the future to differ from the past. Forward-looking costs must reflect the forward-looking, risk adjusted cost of capital, the impact of new technology on depreciation rates, and the actual cost of the technology to be employed. Without accurate forward-looking pieces for all components, a forward-looking cost model will not be truly forward-looking and can send incorrect and inefficient investment signals, possibly jeopardizing the goals of universal service and competition.<sup>5</sup>

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<sup>4</sup> *See* Attachment A, ¶ 4; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, 11 FCC Rcd 15499 (1996) (“Local Competition Order”).

<sup>5</sup> Attachment B, ¶ 25.

Similarly, as is explained in the attached affidavit of Harold Ware and Christian Dippon, the proposed cost inputs for switching and outside plant are inconsistent with forward-looking cost, because they assume that the entire network is built instantaneously to meet a snapshot of current demand;

While a properly conducted, long-run forward-looking analysis should assume that all costs vary, it: (1) should *not* assume that all costs vary simultaneously; and (2) must recognize that firms replace outdated and defective network equipment and accommodate growth by adding capacity to their networks throughout the life of the plant. The FCC's proposed "at once" method defies the concepts of both forward-looking and long-run.<sup>6</sup>

In these respects, the Commission's proposed are fundamentally inconsistent with its own theory of forward-looking costs and must be corrected.

## **V. The Commission's Proposed Inputs For Switching Investment Underestimate Costs By At Least 50 Percent.**

### **A. The Commission's Decision To Ignore The Life Cycle Costs Of Purchasing Switching Equipment Is Not Forward-Looking.**

The Commission's proposed input values for switching investment grossly underestimate the true forward-looking costs of purchasing switching equipment. The formula for switching investment assumes that a carrier uses 94 percent of switch capacity to meet 100 percent of current demand. *See FNPRM*, ¶¶ 171, 184-86. Since about 5 percent of switch capacity must be reserved for administrative and maintenance purposes, and since access lines typically grow from 3 to 4 percent a year, (and new entrants are growing at many times that rate), the Commission's methodology assumes that a carrier

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<sup>6</sup> Attachment C, p. 4.

would have to install new switches in 100 percent of its central offices in the *first year*, and *also* in every year thereafter. This is inconsistent with the Commission's own guideline that “the technology assumed in the cost study or model must be the least-cost, most-efficient, and reasonable technology for providing the supported services that is currently deployed.” Universal Service Order, 12 FCC Rcd 8776, ¶ 250 (1997).

As is discussed in the attached affidavits, it is not consistent with forward-looking cost principles to assume that either an incumbent local exchange carrier or a new entrant would purchase brand new switches for its entire network with just enough capacity to meet current demand. *See* Attachment C, pp. 21-25; Attachment D, ¶ 7. Carriers purchase new switches with spare capacity to handle at least a few years’ line growth, since the cost per-line of a new switch is significantly below the costs of adding capacity to an existing switch. When a switch reaches its practical limit (assuming about a 5 percent reserve for administrative and maintenance purposes), it is not cost-effective to purchase an entirely new (and inefficiently small) switch each year, or to purchase a large switch that would have idle capacity for many years. Rather, a carrier will purchase additional line capacity for the original switch, even though the cost, per-line, of a switch addition is much higher than the initial cost per-line of the switch. This practice is standard throughout the industry, as every carrier has a strong incentive to purchase switch capacity at the lowest possible cost. For this reason, the per-line cost of switches over the long run includes both the initial switch purchase and the additional equipment that is added to a switch over its lifetime.

Nonetheless, the Commission has adopted an approach that no carrier does, or reasonably could follow in the real world, but that the Commission concludes is more “cost-effective” in a hypothetical network that exists only in its computer model. In fact, the Commission's methodology seriously understates switch investment by making unrealistic assumptions. The data gathered by the Commission demonstrates that switch manufacturers offer very large discounts on initial switch purchases, because they know that the carrier will then be “locked-in” to the same manufacturer for additional equipment, which can be priced at much smaller discounts. Since the add-ons are so profitable, the competition for initial switch purchases is intense, and manufacturers will offer “fire sale” prices to win a switch replacement contract. The Commission’s consultants underestimated switching investment by taking advantage of the “fire sale” prices that the carriers have obtained over the years and by discarding the higher per-line costs of adding capacity to existing switches. However, manufacturers would not provide those very low prices if they did not anticipate the substantial profit margins for additional equipment in the future.

Even for newly-installed switches, the Commission's proposed inputs are unrealistically low. As is discussed in the attached affidavit, Bell Atlantic’s own costs of installing new, state of the art digital switches are over 40 percent higher than the results of the Commission's proposed formula, despite Bell Atlantic’s supposed superior bargaining power. *See* Attachment D, ¶¶ 4-6 & Chart 1. This appears to be the result of flaws in the database used by the Commission's consultants as well as statistical errors. *See* Attachment C, pp. 25-30. For example, the data include extremely large variations,

such as host switches that range in costs from \$149 per line to \$1,458 per line. The Commission's cost study attempts to deal with these data problems by arbitrarily excluding the higher prices as "outliers," but this approach is not justified absent evidence that the data being discarded are unreliable. *See* United States Telephone Association v. FCC, D.C. Cir., Case No. 97-1469, slip op. at p. 6 (dec. May 21, 1999) (the FCC may not eliminate outlying data points without explaining why the data are unreliable or their use inappropriate). By setting arbitrary cut-offs for outliers, the Commission's study throws out relevant data and understates the costs of acquiring switching equipment.

This understatement of switch investment levels, in turn, causes an understatement of plant-specific expenses and general support facilities investments, which the Commission proposes to incorporate using the ratio of expenses to investments in the local exchange carriers' automated reporting management information system ("ARMIS") reports. *See* FNPRM, ¶¶ 208-10. Consequently, if the Commission's estimate of switch costs are half of the ARMIS switch investment, then the model would load only half of the ARMIS plant-specific expenses and general support expenses.<sup>7</sup> This is unreasonable. The switch does not take any less effort to maintain, and the building that houses it does not get any smaller, just because the Commission assumes a lower price to purchase it.

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<sup>7</sup> See Attachment C, p. 37. Although the Commission uses a current-to-booked ratio to restate the ARMIS investment to current acquisition cost, this does not compensate for the fact that the Commission greatly underestimates the costs of acquiring switching capacity in the first place.

**B. The Commission Should Adopt Realistic Switch Costs Based On All Of The Available Data.**

The Commission could cure some of these shortcomings simply by using the data it threw out when constructing the proposed switch curves – the data in the local exchange carrier depreciation studies and in the RUS studies concerning the costs of adding capacity to existing switches. *See* FNPRM, ¶¶ 170-171. As Sprint demonstrated in response to the Gabel and Kennedy study, it is fairly simple to adjust the cost curves to include the costs of adding equipment to existing switches. *See* *Sprint Ex Parte*, CC Docket Nos. 96-45 and 97-160, FCC CCB Cost Model Input Workshops (filed Dec. 17, 1998). While the Commission also would need to correct the underestimate of the costs of new switches, as is shown in Attachment D, the Sprint data show that much more realistic switch costs can be obtained simply by incorporating the data that the Commission incorrectly excluded.

In addition, the Commission should make other adjustments to its estimates of switch costs that would better reflect actual forward-looking costs. First, the Commission should not use a time series to project additional declines in switch costs from the end of its data series (1996) to the present. *See* FNPRM, ¶¶ 166-169. Although the Commission adopted a reciprocal form of the time regression equation to cure the problem that the previous cost curve went negative in the near future, it still makes an incorrect assumption that switch prices will continue to decline. In Bell Atlantic's experience, switching costs have leveled out in the last few years. *See* Attachment D, ¶ 6. Second, the Commission should adopt a more realistic effective fill factor for central office switches of 83 percent.

*See id.*, ¶ 8. This fill factor reflects the average fill factor that the local exchange carriers currently achieve at cutover.

## **VI. The “Road Surrogate” Method Of Locating Customers Combines An Inaccurate Database With A Flawed Methodology.**

While the Commission observes that, *in theory*, the most precise method of locating customers is to use data on each customer’s actual latitude and longitude, or “geocode,” *in practice* there is no reliable source of such data. *See FNPRM*, ¶¶ 25-28. The Commission properly rejected the database established by PNR Associates, primarily because PNR has refused to allow public review and comment necessary to validate the accuracy of that database. *See id.*, ¶ 28. While the Commission hopes that an accurate source of geocode data may be identified at some point – although there is no indication that any such database will be developed in the foreseeable future – it tentatively decided to use admittedly inaccurate “surrogate” data. The Commission proposes to use a road surrogate algorithm to create fictitious customer locations lines in each wire center. *See id.*, ¶ 43.

This latest approach is not an improvement. In the Platform Order,<sup>8</sup> the Commission decided to use the road surrogate algorithm to “fill in the gaps” only where data on actual customer locations were not available. *See Platform Order*, ¶ 40. This algorithm, which distributes customer locations uniformly along road segments, is

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<sup>8</sup> Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, 13 FCC Rcd 21323 (1998).

inherently random, since it does not reflect the actual location of any customer.<sup>9</sup> Also, road surrogate data are likely to be least accurate for the areas that are most critical for determining high cost support – the sparsely-populated rural areas where the correct placement of customer locations has the largest effect on loop costs. For these reasons, the Commission rejected the outside plant model proposed by the sponsors of the Benchmark Cost Proxy Model, which relied upon 100 percent road surrogate data. *See id.*, ¶¶ 33-35.

The inaccuracy of the road-surrogate process is further compounded by the Commission's proposal to use PNR's National Access Line Model as the source of wire center line counts. PNR's line counts are drawn from a smorgasbord of data sources and are wildly inaccurate at the wire center level.<sup>10</sup> In addition, the PNR methodology does not use actual wire center boundaries, but artificial boundaries calculated by Business Location Research. *See FNPRM*, ¶ 38.

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<sup>9</sup> *See* AT&T and MCI Ex Parte Presentation, CC Docket Nos. 96-45, 97-160 (filed May 20, 1999) (arguing that using 100 road surrogate data places customers where they do not exist and has varying effects on loop lengths by wire center).

<sup>10</sup> *See* Attachment E. PNR still does not have line count data for three entire states, Puerto Rico, and 84 wire centers in other states. *See FNPRM*, ¶ 31. The Commission proposes to fill in the missing states by using other PNR customer location data that include some geocode data, and by placing non-geocoded customers along the perimeter of the Census Block. *See* Public Notice, DA 99-1165 (rel. June 15, 1999). However, the Commission previously found that this method of distributing non-geocoded customers was unreliable, placing customers in uninhabitable areas and creating false clusters. *See Forward-Looking Cost Mechanism For High Cost Support for Non-Rural LECs*, 13 FCC Rcd 21323 (1998), ¶ 40.

The result, not surprisingly, is that the model does a very poor job of matching actual line counts and loop lengths at the wire center level. As shown in Attachment E, the model's line counts at the wire center level are often 50% higher and 50% lower than actual line counts, despite the fact that the PNR line counts are adjusted to match actual data at the state level. Similarly, the model's average loop lengths show no correlation with actual loop lengths. The Commission cannot shrug off these results by speculating that the carrier's actual loop lengths do not represent an efficient, forward-looking design. If that were true, the model would always produce shorter loop lengths, which it does not. In fact, even at the state level, where many errors are masked through state-wide averages, the model often estimates significantly longer loop lengths than the actual network. *See id.* The Commission must recognize that the model simply does not produce accurate results at any level.

Since loop design is the starting point of the model, and the largest factor in distinguishing between high cost and low cost areas, these inadequacies in the customer location module contaminate the rest of the model and prevent it from properly identifying the amount of universal service support needed in each area.

## **VII. The Commission's Outside Plant Input Values Are Incorrectly Calculated.**

### **A. The Gabel and Kennedy Study Of Cable and Structure Costs Is Not Statistically Valid.**

The Commission proposes to adopt cable and structure input costs using a National Regulatory Research Institute ("NRRI") study of Rural Utilities Service ("RUS")

data by its consultants, David Gabel and Scott Kennedy. *See* FNPRM, ¶¶ 72-95, 107-115. As is explained in the attached affidavit of Harold Ware and Christian Dippon, there are numerous statistical flaws in this study that make it unsuitable for estimating the costs of non-rural local exchange carriers. The following highlights the most significant problems.

First, the underlying data set is not designed for the purposes for which it is being used in the model. *See* Attachment C, p. 9. The data are based on rural company contracts for entire projects, and do not contain actual unit costs. The NRRI study attempts to allocate contract costs, which usually have no separately identifiable unit costs, to the model's input categories in an arbitrary manner. Without unit costs, any attempt to allocate contract costs to individual items runs the risk of seriously distorting the data.

Second, as the Commission recognizes, the rural company data in the NRRI database do not represent the costs of the non-rural carriers. The Commission tries to compensate for this fact through an adjustment for the supposed "superior bargaining power" of the non-rural carriers based on data from a proceeding before the Maine Public Utilities Commission. *See* FNPRM, ¶¶ 79, 82, 84, 91. However, the data from one state are statistically insufficient to represent the costs of the entire nation, or even the rest of the Bell Atlantic region. *See* Attachment C, pp. 9-10.

Third, the Gabel and Kennedy study suffers from several econometric errors, such as the use of "ordinal values" for the costs of placing structure in different types of soil. *See* Attachment C, pp. 13-14. Ordinal values, such as zero for normal soil, one for soft

soil, and three for hard soil, are rankings that simply indicate that one type of soil is more costly to deal with than another. However, the model uses them as quantitative values, implying, for instance, that hard soil is twice as expensive to deal with as soft soil. The model instead should use “dummy” variables that allow the true cost relationships to be applied.

Fourth, the “robust regression technique,” under which Gabel and Kennedy excluded statistical “outliers” in the RUS data, should not have been used unless there was evidence that the outliers were erroneous, and it should have been considered only if the distribution of the data is symmetric and if erroneous data are more likely to occur in the “tails” of the distribution. *See* Attachment C, pp. 14-17. It is not clear whether the authors of the study examined the data for possible errors. In fact, the data set is not symmetrical (data on the low side is truncated at zero, while there is no limit on observations on the high side), and there is no evidence that there data in the “tails” of the RUS data are unreliable. By excluding the outliers, the study deliberately ignores data that may be very valuable in constructing accurate cost estimates.

These errors may account for the fact that the output of the model is highly unrealistic. For example, the cost curve for 24 gauge copper cable declines at approximately 2,000 pairs, becoming negative at approximately 3,400 pairs. *See* Attachment C, pp. 31-32 & Figure 1. This implies that suppliers would pay the local exchange carriers to take large copper cables off their hands. Not surprisingly, the Commission's proposed input values for cable do not follow the Gabel and Kennedy formulae. *Compare* FNPRM, Appendix A *with* Appendix D. However, the Commission

does not explain how it converted the negative numbers in the Gabel and Kennedy study to positive numbers.

For these reasons, the Commission should not use the Gabel and Kennedy study of RUS data to develop outside plant inputs. Rather, the Commission should use company-specific inputs based on actual current purchase contracts. The attached affidavit of Patrick Garzillo provides data concerning Bell Atlantic's actual current costs for cable and structure. *See* Attachment D. These values are far more representative of the forward-looking costs of non-rural local exchange carriers than Gable and Kennedy's flawed extrapolations from the small company RUS data.

**B. The Commission's Proposed Values For Structure Sharing Are Unrealistic.**

The Commission's proposed percentage values for assigning the costs of aerial, underground, and buried structure to the local exchange carrier are well below the level that is currently being achieved or that are achievable in the future. The Commission proposes to assign as low as 35 percent of aerial structure costs, and as low as 55 percent of underground and buried structure costs, to the local exchange carrier. *See* FNPRM, ¶¶ 129-132. However, as is discussed in the Affidavit of Patrick Garzillo, it is unrealistic to assume that less than about 45 percent of aerial costs are borne by the local exchange carrier, and Bell Atlantic shares very little (less than 2 percent) of underground and buried structure with other utilities. *See* Attachment D, ¶ 14 & Chart 11. Indeed, the Commission's rules implementing the "pole attachments" provisions of Section 224 of the Act make it difficult for a local exchange carrier to bear less than 50 percent of the costs

of poles and conduits, since the carrier must bear one-third of the costs of unusable space in addition to pro-rata shares of the rest of the unusable and usable space. *See* Amendment of the Commission's Rules and Policies Governing Pole Attachments, 13 FCC Rcd 6777 (1998).

The Commission's very low assignment of costs to the local exchange carrier assume, without evidence, that other utilities will make much greater use of facilities owned by the local exchange carrier than they have in the past and that they will coordinate their infrastructure investments to suit the construction timetable of the local exchange carriers. For instance, to share buried trenches with the local exchange carrier, other utilities would have to wait to run their own cables until the local exchange carrier had a need to reinforce or establish telephone facilities. In reality, even in the least dense areas, very little buried telephone feeder cable is trenched at the same time with other utilities.

The Commission cites no evidence that the local carriers could avoid paying for most of their own structure costs. Accordingly, the Commission should adopt the structure sharing values proposed in the attached affidavit, which represent the amount of structure that can reasonably be shared in the foreseeable future. *See* Attachment D, Chart 11.

## **VIII. Expense Factors Should Be Changed To Reflect Achievable Costs.**

### **A. The Commission Should Use Expense Factors That Are Specific To Each Area.**

The Commission correctly proposes to rely on ARMIS data to develop expense loadings, but its methodology inexplicably discards data that help to identify high cost areas. For example, the Commission proposes to use nationwide averages for expense loadings rather than data in the ARMIS reports, which are disaggregated to the study-area level. This defeats the purpose of a proxy model, because it averages high cost states with low cost states. In general, the Commission should use the most specific data inputs that are available, whether region-wide, company specific, or study-area specific. While data are not always available at fine levels of disaggregation, there is no reason to throw out data that more accurately identify the costs in each area.

Moreover, the reasons for ignoring ARMIS study area data are not persuasive. The Commission states that it has not been able to obtain current cost-to-book cost ratios for all of the ARMIS study areas, but the Commission could simply use average current cost-to-book ratios and apply them to company-specific ARMIS expenses. This would at least capture some of the differences in costs in different areas. The Commission's statement that use of company-specific expense loadings would reward less-efficient companies is inconsistent with the Commission's own recognition that carriers in different parts of the country are subject to significant differences in input costs, such as the cost of land and wages. *See* FNPRM, ¶ 199. As the Commission notes, the federal government itself uses local pay differentials to reflect differences in cost of living and market labor rates by locality. *See* id., ¶ 200. At the very least, the Commission should use a measure,

such as the wage differential indexes used by the President's Pay Agent, to disaggregate wage-related ARMIS expense data by region. *See id.*

**B. The Commission Should Not Apply ARMIS Plant-Specific Expense And General Support Facilities Investment Data As A Ratio Of Investments.**

As is noted above, the Commission's tentative decision to apply plant specific expenses and general facilities investments based on ratios of ARMIS data to current investment (FNPRM, ¶¶ 204, 210) seriously understates expenses due to the unrealistically low inputs for certain investment categories. In particular, by using an assumption of 100 percent brand new switches and the flawed Gabel-Kennedy study, which drastically reduce switch investments, the Commission produces a corresponding reduction in plant-specific expenses and general support facilities investments that no carrier could achieve. A carrier's costs of maintaining a switch of a given size do not vary directly with the price that is paid. Nor does the size of the building used to house the switch or the other support investments vary with the price of a switch. If the Commission intends to rely upon ARMIS data for the actual current costs of maintaining and supporting equipment (which it should), it should not arbitrarily reduce those costs by extraneous factors such as the discounts that are assumed when a switch is purchased. For this reason, it would be far more appropriate to develop plant specific expenses and general support facilities investments on some other basis (for example, an activity based approach) rather than as a ratio of investment. Alternatively, the Commission could derive the inputs for these categories as the ratio of plant-specific expense and general support facilities expenses in ARMIS to forward-looking plant investment in the model. This

would produce a more realistic estimate of expenses and general support investment needed to support plant at current demand levels.

**C. The Commission Should Use Actual Productivity Gains, Rather Than The Discredited X-Factor, To Convert 1996 Expense Data To Current Values.**

The Commission should not adopt its proposal to use the 6.0 percent productivity component of the current price cap “X-factor” to bring 1996 common support service expense data forward to 1999. *See* FNPRM, ¶ 226. As the Commission notes, the D.C. Court of Appeals recently reversed the Commission's decision adopting the 6.0 percent factor, finding that “none of the reasons given for choosing 6.0% holds water.” United States Telephone Assoc. v. FCC, No. 97-1469 (rel. May 21, 1999), p. 6. In addition, the 6.0 percent factor is based on productivity data for 1986 through 1995, which do not reflect the change in productivity from 1996 to the present. More recent data submitted by USTA in the price cap proceedings, which updates the Commission's total factor productivity analysis, shows that the productivity components of the X factor for 1996 and 1997 were 2.56% and 3.97%, respectively. *See* USTA *ex parte*, CC Docket Nos. 96-262 and 94-1 filed April 14, 1998. The Commission should use current productivity data, adjusted for inflation (*see* FNPRM, ¶ 226), to bring 1996 expense data forward to current values. Alternatively, the Commission should use 1998 ARMIS data for its expense inputs, which are the most accurate data currently available.

**IX. The Use Of Depreciation Rates And A Rate Of Return That Were Prescribed By The Commission In A Regulated, Monopoly Environment Are Inconsistent With Forward-Looking Cost Principles And The Commission's Own Orders.**

The Commission's tentative decision to use the projected lives and future salvage percentages for the asset accounts in its Part 32 rules to determine depreciation expenses, and to use the prescribed federal rate of return of 11.25 percent to determine the cost of capital, are completely inconsistent with the Commission's own orders. *See* Attachment B. When the Commission first articulated forward-looking cost principles in its local interconnection order, it recognized that “the combination of significant sunk investment, declining technology costs, and competitive entry may increase the depreciation costs and cost of capital of incumbent LECs.” Local Interconnection Order, 11 FCC Rcd 15499, ¶ 686 (1996). Accordingly, the Commission stated that “properly designed depreciation schedules should account for expected declines in the value of capital goods” and that “an increase in risk due to entry into the market for local exchange service . . . can and should be captured” in any forward-looking cost model. *Id.*, ¶¶ 686, 687. The Commission’s prescribed depreciation rates and rate of return take none of this into account. The prescribed rates are completely backward-looking – the Commission cites nothing but historic data to support these prescriptions. *See id.*, ¶ 235. In the competitive environment of the future, neither incumbent carriers, nor new entrants, are guaranteed recovery of their investment or a return on capital. Therefore, it is essential that the Commission adopt shorter asset lives, and a risk-adjusted rate of return, in developing the cost of capital.

At the very least, the Commission should adopt depreciation lives that the local exchange carriers currently use for financial reporting purposes. Although these lives do not reflect fully the changes in the competitive environment that will occur in the future, they incorporate a more realistic view of the economic value of current investments than the Commission's prescriptions. Attachment B shows the difference, by Part 32 Account, between the Commission's proposed default values and economic depreciation lives that Bell Atlantic submitted in a recent proceeding in New York. In many accounts, the Commission's prescribed lives greatly exaggerate the useful lives of equipment currently used in the network.

In the Commission's rate of return investigation, Bell Atlantic submitted an analysis by Dr. Vander Weide that demonstrated that the current cost of capital for the incumbent local exchange carriers is in the range of 12.75 to 13.15 percent.<sup>11</sup> These rates of return are conservative, because they are well below the level that a new entrant would need to attract capital. In addition, the cost of capital for both incumbent local exchange carriers and new entrants is likely to be much higher as they incur risky new investments to introduce service innovations. *See* Attachment B, ¶ 12. Accordingly, the Commission should adopt a cost of capital component no lower than 12.7 percent.

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<sup>11</sup> *See In the Matter of Prescribing the Authorized Unitary Rate of Return for Interstate Services of Local Exchange Carriers*, CC Docket No. 98-166, Response to Direct Case and Reply Comments of Bell Atlantic (filed March 16, 1999), pp. 2-5 & Reply Affidavit of James H. Vander Weide, ¶ 5.

**X. Conclusion**

The proxy model inputs fail to conform to forward-looking cost principles, and the input data are still too inaccurate to reliably identify high cost areas for universal service support. The Commission should take a more modest, but yet much more effective, approach of modifying the existing high cost funding mechanism to target high cost areas within a state.

Respectfully submitted,

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